

Holotype (a left valve) (U.S.N.M. no. 560585) measures: Height 22 mm, length 27 mm, diameter of single valve 7.8 mm.

Type locality and only known occurrence: A gully in the west center of sec. 10, T. 9 N., R. 4 E., Clarke County, Ala. The gully lies on the south side of the county road.

This species is closely related to *Nucula magnifica* Conrad, a species described from the Gosport sand in the upper part of the Claiborne group of Alabama, and also present in the Lisbon formation of Alabama and the equivalent portion of the McBean formation of eastern Georgia and South Carolina in the middle part of the Claiborne group. In shape, size, and dentition the two species are nearly identical. *Nucula magnifica* has a smooth surface, but occasional specimens show a slight tendency for the de-

velopment of concentric markings similar to those of *N. austinclarki* at a point or two along the posterior ridge.

*Nucula austinclarki* is from the Lisbon formation, the middle part of the Claiborne group in Alabama. Its association with *Ostrea sellaeformis* indicates that it is from the middle or upper part of the Lisbon and not from the lowest part, which carries *Ostrea lisbonensis*, the apparent forerunner of *O. sellaeformis*. From the general field relations it appears to occur in the lower part of the range of *Ostrea sellaeformis*. *Nucula magnifica* is apparently a younger species than *N. austinclarki*, being known from the upper part of the range of *Ostrea sellaeformis* and from the Gosport sand, which is stratigraphically higher than the upper limit of the range of *Ostrea sellaeformis*.

MALACOLOGICAL.—*New stenothyrid gastropods from the Philippines (Rissoidae)*.<sup>1</sup>

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During a survey of fresh-water mollusks in 1945 on the Island of Leyte, Republic of the Philippines, ecological and morphological notes were made on living specimens of a species of *Stenothyra* Benson, 1856, which has subsequently proved to be undescribed. An undescribed subspecies from Mindoro Island of this polytypic species was found in the U. S. National Museum. It was collected in the 1880's by J. F. Quadras and bore the manuscript name of "philippinica Moellendorff." These two gastropods are named in honor of Austin H. Clark, retiring curator of echinoderms, United States National Museum, who has given me great encouragement and help.

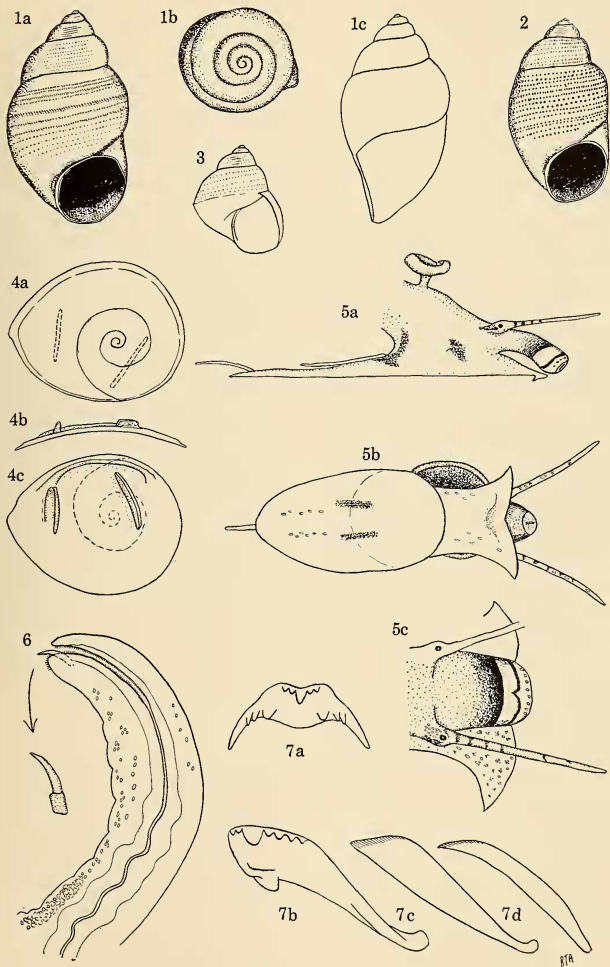
*Stenothyra austini*, n. sp.

Figs. 1, 3-7

*Description*.—Shell small, about 3.0 mm in length, ovoid, relatively thick-shelled, compressed ventrally, with a small circular aperture, and with unevenly developed whorls. Spire blunt and somewhat rounded. Nuclear whorls  $1\frac{1}{2}$  in number, transparent. Postnuclear whorls 3 to 4 in number, increasing irregularly in size (so that the

ventral face is flattened) until the last whorl, when they then decrease in size and form the relatively small, circular aperture. Periphery of early whorls well-rounded; last whorl moderately rounded. Suture finely and sharply impressed. Base of shell set at  $45^\circ$  to the axis of the shell, slightly convex, and thickened slightly in the area near the very small umbilicus. Aperture almost circular, with a slightly thickened continuous peristome. Behind the lip, on the exterior of the body whorl, there is a slightly thickened, smooth varix. Axial sculpture absent. Spiral sculpture consists of 10 to 15 rows of microscopic pits on the upper two-thirds of the whorl. The pits may be round, squarish or oblong. Umbilicus reduced to a minute chink. Color of shell from yellowish tan to light brown. In living specimens, the shell is translucent and the pits appear as tiny bubbles embedded in the shell. Periostracum thin, light tan. In living specimens, it covers the small pits. It is often covered with a blackish film of organic detritus. Operculum almost circular, chitinous, paucispiral, with the nucleus near the center. There are two raised, oblong lamellae of chitin reinforcing the surface of attachment. The anterior, inner edge is reinforced by a low, curved ridge (see Fig. 4). In adults, the operculum is often slightly larger than the aperture and incapable of being withdrawn into the shell.

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. Received October 6, 1950.



FIGS. 1, 3-7.—*Stenothyra austini austini*: 1, Holotype shell ( $\times 10$ ) (a, apertural view; b, apical view; c, side view); 3, immature shell; 4, operculum (a, outer view; b, side view; c, inner view); 5, living animal (a, lateral view; b, ventral view; c, dorsal view of head region); 6, male genitalia (verge); 7, radula (a, raehidian; b, lateral; c, inner marginal; d, outer marginal).

FIG. 2.—*Stenothyra austini clarki*, holotype shell ( $\times 10$ ).

		Measurements of shell (mm)		
Length	Width	Aperture	Whorls	
4.0	2.2	1.2 by 1.2	5.3 (holotype)	
4.0	2.1	1.3 by 1.3	5.5 (paratypes)	
3.5	2.1	1.0 by 1.1	5.0 (U.S.N.M. No. 603670)	
3.3	1.8	0.9 by 1.0	5.0 U.S.N.M.	
2.8	1.7	0.8 by 0.9	4.9 U.S.N.M.	
2.1	1.6	1.1 by 1.0	4.0 U.S.N.M. (young)	

Measurements of 97 adult paratypes from San Joaquin Estuary, eastern Leyte Island (U.S. N.M. no. 603671) were made to a tenth of a millimeter and grouped in the following classes:

Length (mm)	Number of specimens
2.6-2.9	13
3.0-3.3	47
3.4-3.7	35
3.8-4.2	2

*Animal*.—Small and capable of being completely retracted into the shell. Foot relatively long, flat, with the anterior corners produced laterally, and with a transverse division across the sole about halfway back and at a point coinciding with the anterior edge of the operculum. Anterior edge of foot with a deep, narrow, transverse mucus slit which bears minute cilia. A bulbous pedal gland may be seen at the anterior end from a ventral view. At the posterior end and dorsal side of the foot there is a long, slender, fleshy rod. Proboscis large, swollen in the middle, with two circular color bars of black-brown near the anterior end. The posterior bar fades posteriorly into an area of dark reddish brown. Between the bars the flesh is bright, straw-yellow. Tentacles long, slender, flecked with bars of black and an occasional internal granular clump of yellow. Area about eye dark gray, posteriorly with a heavy concentration of embedded light-straw granules. Mantle light gray with heavy mottlings of black. Vergé located on the midline of the "back" of the animal. It is in the form of a coiled, single prong. The distal end bears a minute calcareous spine. The radula is taenioglossate (see Fig. 7).

The typical subspecies *austini austini* is characterized by the weak pits in the shell and the irregular spacing of the spiral rows of pits.

*Type locality*.—Bridge at Kaboynan, near the mouth of the north fork of the Guinarona River, Leyte Island, Republic of the Philippines. R. T. Abbott, legit, June 18, 1945.

*Types*.—Holotype, U.S.N.M. no. 603669. Paratypes from the type locality, U.S.N.M. no. 603670, and in the Museum of Comparative Zoology, Cambridge, Mass. (the latter collected by M. S. Ferguson). Paratypes also from San

Joaquin Estuary, eastern Leyte Island, R. T. Abbott, legit, June 29, 1945 (U.S.N.M. no. 603671); Abuyog, eastern Leyte Island, R. T. Abbott, legit, August 14, 1945 (U.S.N.M. no. 603672).

*Ecology and habits*.—These mollusks are very active but shy creatures and were collected in three estuarine localities on Leyte Island. At the type locality they were found in 6-inch-deep, stagnant, brackish-water pools under the shade of floating palm fronds. The bottom was black ooze. *Synccera* and *Neritina ziczac* Linnaeus were found in the same neighborhood. At San Joaquin they were found under similar conditions where the water temperature was 81° F. and the pH 7.6. Several species of *Synccera*, a *Cerithidea*, and *Clenchiella victoriae* Abbott, 1948, were collected with them. These *Stenothyra* are rapid crawlers. At the slightest disturbance they snap back into their shells with remarkable speed.

*Remarks*.—The only other described species of *Stenothyra* in the Philippines that possesses spiral rows of pits is *S. quadrasi* Moellendorff, 1895, which, however, is a much larger shell (7 mm in length), much thicker, with a very thick, flattened, and spirally lirate base, and with distinctly angled early whorls. *S. austini* apparently has a wide range throughout the Philippines but appears to be broken up into geographical, insular races or subspecies. We have a single specimen from Bacoor Bay, Luzon (U.S.N.M. no. 603674), but we hesitate to describe it as a new race until additional material is at hand.

#### *Stenothyra austini clarki*, n. subsp.

Fig. 2

Shell similar to *S. austini austini* but differing in having deeper and larger pits and in having the spiral rows evenly spaced. In *austini* there are often three or four rows missing. The shells of our specimens of *S. austini clarki* are reddish brown in color, but this may be due to ecological conditions. Holotype: Length, 3.4; width, 1.9 mm.

*Type locality*.—The holotype, U.S.N.M. no. 603673, is from Manglares, between Bacoy and Calapan, Mindoro Island, Republic of the Philippines. J. F. Quadras, legit, circa 1880. Two paratypes from the same locality, U.S.N.M. no. 303387, are probably from the same collector.

The difference in shape between these subspecies, as seen in Figs. 1a and 2, is not specifically significant. Some specimens of *austini* are similar to those of *clarki* in shape and size.